

# CONNECTING NORTH CAROLINA

*State Broadband Plan  
Summary and Recommendations*

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State Broadband Plan  
Summary and Recommendations



*Broadband  
Infrastructure*

INFORMATION TECHNOLOGY

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June 21, 2016

Fellow North Carolinians:

When Governor Pat McCrory took office, he committed to transforming the state's digital infrastructure to more effectively and efficiently serve North Carolinians, better positioning the state for the future. He understands that high-speed internet access is critical to enhancing education, economic development, health care, and public safety.

In accordance with Session Law 2015-241, I am proud to offer this plan as the state's guiding document on the policies and actions necessary to increase North Carolinians' access to affordable high-speed internet. A collaborative effort, the plan uses feedback gathered from more than a dozen stakeholder listening sessions, discussions with nearly 80 subject matter experts, and a survey of 3500 local leaders.

Through the course of writing the plan, two common themes emerged: active and engaged communities and their partnerships with private sector internet service providers are the biggest factors in bridging existing digital divides. Therefore, the plan's recommendations encourage communities to be active participants in the development process.

Recommendations focus on lowering deployment construction costs, expanding access for K-12 students at home, preparing a 21st century workforce, and increasing small business adoption and use. It also looks at ways to enable new health care technologies and provide the necessary tools to public safety responders to ensure North Carolinians' safety.

I am pleased to say that North Carolina leads the nation in many measurable categories such as the percentage of the population with access to high-speed internet and public school connectivity. But, according to the Federal Communications Commission, almost 750,000 North Carolinians still do not have high-speed internet access, and eighty-nine percent of those citizens live in sparsely populated communities and counties. So, there is still more to be done. This plan provides the guidance and roadmap to ensure all North Carolinians have access to affordable broadband service and to prepare the state for future growth and demand. Most importantly, it helps to achieve Governor McCrory's vision of effectively serving the citizens of North Carolina by reimagining the role information technology plays in the state.

Sincerely,



Keith Werner

# EXECUTIVE SUMMARY

High-speed internet may be the most significant innovation of the late 20<sup>th</sup> century. Its benefits—from creating jobs to transforming education—are profound.

North Carolina’s broadband internet infrastructure is robust. The state leads the nation in developing, leveraging, and utilizing broadband-enabled technologies to help children learn and stimulate economic development. The existing infrastructure positions the state to create a 21<sup>st</sup> century prepared workforce, increase small businesses’ efficiency and effectiveness, and enable new healthcare technologies and service models. Faster, more reliable connectivity allows first responders and law enforcement to access data that could save lives and increase safety.

However, broadband’s benefits are not evenly dispersed and a digital divide, or “a gulf between those who have ready access to the internet and computers,”<sup>i</sup> and those that don’t, is growing. Many communities, typically in sparsely populated or economically-distressed areas lack access to infrastructure or affordable service. Additionally, broadband adoption—the proportion of citizens subscribing to internet service—is low in NC given the rate of broadband availability in the state and contributes to the widening digital divide.

This divide, new technologies, user demand,<sup>ii</sup> and greater reliance on internet access, necessitates ongoing infrastructure upgrades within our state.

## Time for a Plan

This plan answers the charge by the North Carolina General Assembly (NCGA) [EN: Session Law 2015-241] to assess the current status of broadband availability and use across the state, analyze the best methods and means to “establish universal access,” and offer strategies to achieve universal access.

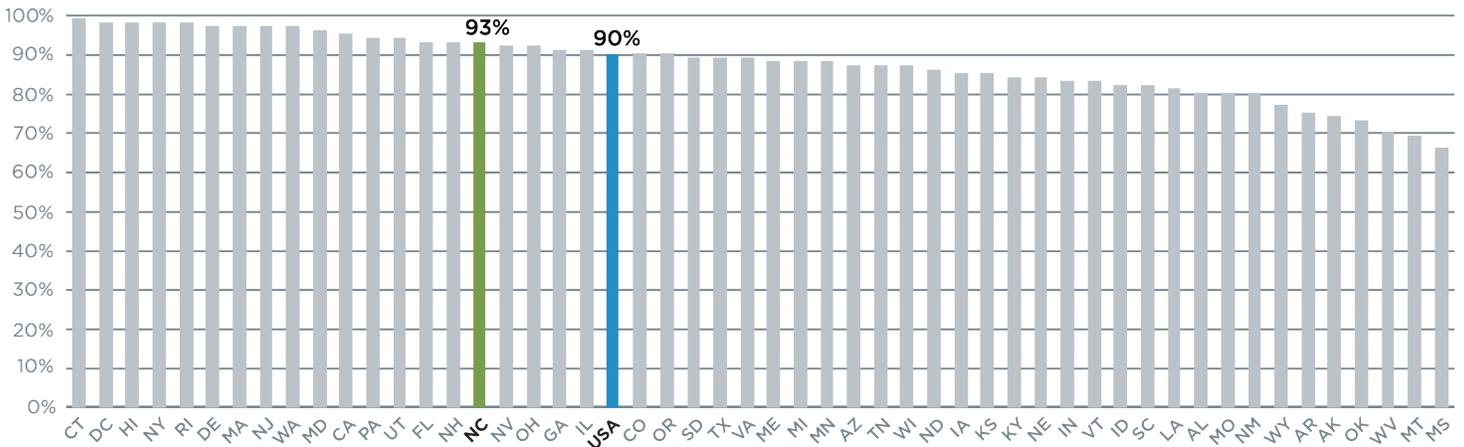
A thorough analysis of current deployment, access, and adoption was completed using available data from state and federal resources and feedback from community leaders and stakeholders. In keeping with the statutory requirement, the plan’s recommendations are informed by subject matter experts, providers, state agencies, local leaders, and stakeholders representing various populations and industries (Appendices B and C).

The majority of the recommendations are state budget-neutral. The few that require funding identify a funding source, typically an established private, federal, or state loan or grant fund.

## Current Status

These recommendations and the implementation strategies build upon the current state of broadband deployment and adoption. NC’s broadband deployment rate (tied with FL) ranks slightly above the U.S average (93 percent) and is the highest deployment rate among southeastern states.<sup>iii</sup> Providers continue to invest in expanding infrastructure in NC as evidenced by NC’s seven percent increase in deployment rates between 2013 and 2014.

FIGURE 1. BROADBAND DEPLOYMENT RATE COMPARED TO OTHER STATES

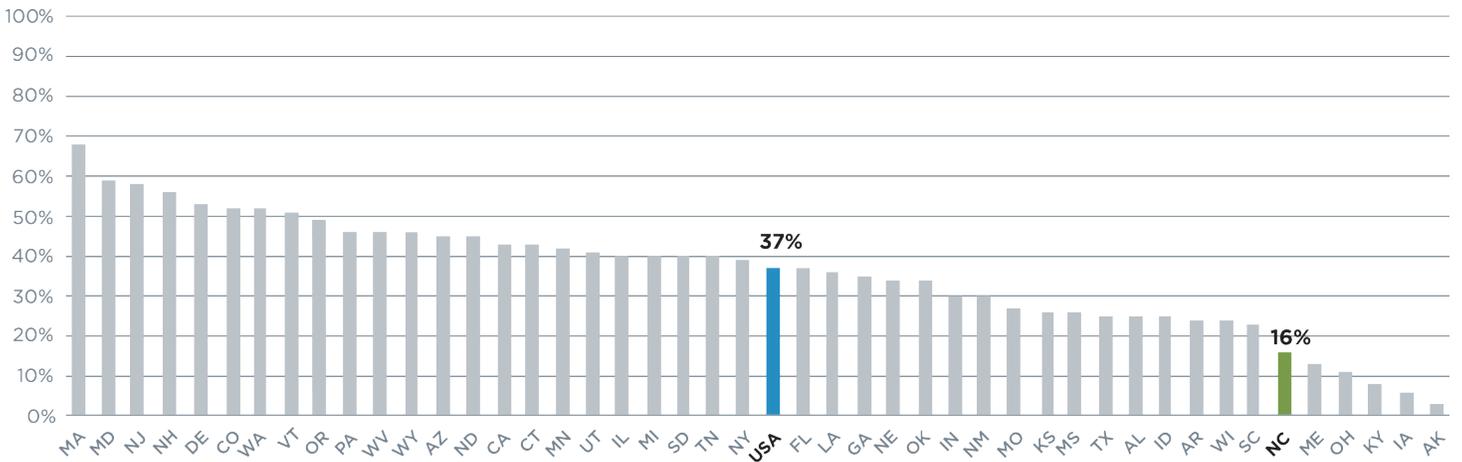


Source: FCC 2016 Broadband Progress Report, data current as of 12/3/14

The counties with low deployment rates are areas with low population density. Only one percent of the households without access are in urban areas.

However, North Carolina has one of the lowest adoption rates in the country. Even among households with access to broadband (defined at 25 Megabits per second and 3 Megabits per second upload) only 16 percent are subscribing. Adoption is particularly low among low-income households. In 2013, only 47 percent of NC households with annual incomes under \$15,000 adopted broadband.<sup>iv</sup>

**FIGURE 2: BROADBAND ADOPTION RATE COMPARED TO OTHER STATES\***



\*out of 45 reporting states. Source: FCC 2016 Broadband Progress Report, Data Current as of 12/14

Because adoption is a key indicator of use, it is inextricably linked to universal access. Usage enhances consumer demand, which drives deployment and investment, and drives further innovation and economic development. Adoption rates directly affect broadband’s social benefits, namely a better educated and informed citizenry.

In addition to the lack of broadband availability, there are four main barriers to broadband adoption, and they’re particularly pronounced among low-income households. The primary barriers are: the cost or affordability of service; the real or perceived costs of a computer; laptop or other devices; digital literacy; and the internet’s perceived relevancy in a person’s daily life.

Within the broad topics of availability and adoption, the plan addresses specific issue areas and industries identified as facing significant and imminent challenges and opportunities.

The issue areas addressed in the plan include: K-12 education, economic development, telehealth, and public safety.

As the state moves to digital learning and enhances internet connectivity within schools, a large number of children cannot complete digital homework assignments. This phenomenon-called the ‘homework gap’-is a significant concern among educators, community leaders, and parents and must be addressed if our children are to be prepared for the digital economy.

The state must better leverage broadband infrastructure to enhance economic development in rural areas, workforce development, and small business adoption. Using broadband technologies, the state can develop opportunities in the healthcare sector to reach a greater number of people and reduce costs. Finally, digital infrastructure must be large and secure enough to ensure the effective execution of public safety agencies’ missions—to protect North Carolinians.

## State Broadband Plan

State and local government leaders can impact the broadband ecosystem by encouraging competition and empowering communities to act. By updating laws and policies, and designing policies to incentivize adoption in sectors the government heavily influences, lawmakers can foster both the supply-side and the demand-side. The plan recognizes:

- Increased competition drives innovation, affordability, and the deployment of future-proof infrastructure.
- In areas where competition is lacking, empowered and engaged communities form more equitable partnerships with private sector internet service providers (ISPs). Communities can lower deployment costs by better leveraging existing infrastructure, easing access to right-of-ways and poles to facilitate path creation, and investments in next-generation infrastructure.
- Community-based adoption and utilization programs help drive demand.
- Federal, state and private loans and grants offer untapped funding for infrastructure, planning, and adoption initiatives, including subsidies for low-income households.

### GOALS AND OBJECTIVES

The plan’s overarching goal is for every North Carolinian to have affordable access to broadband service—wireline or wireless—if they so choose, by June 2021. The following objectives support these goals:

- Increase the percentage of households with access to fiber optic cable to 50 percent by June 2021
- Increase the percentage of households with access to broadband to 100 percent by June 2021
- Increase household adoption rates to over 60 percent by June 2021<sup>v</sup>

- Affordable access to the internet outside of school for 100 percent of K-12 students by June 2021
- Ensure high-speed internet access is available at all libraries by 2020 (currently just over 50 percent)
- A state-wide model for the development and deployment of local, community-based digital literacy programs

## Implementation

The best laid plans remain mere ideas unless they're adopted and thoughtfully implemented. To achieve the goal of ensuring every North Carolinian has affordable access to broadband service, if they choose, by June 2021, collaborations and shared responsibility for implementation is required. Building this plan was a collective effort. The responsibility for implementing the plan will also require a team-based approach.

As the plan's author and resource-hub for broadband in the state, the Broadband Infrastructure Office (BIO) within the Department of Information Technology will monitor implementation and report on the plan's progress.

Successful implementation also relies upon strong leadership by those who directly impact the broadband ecosystem: the executive branch, the General Assembly, state agencies, non-profits, and broadband service providers.

BIO's Technical Assistance team will continue to work with NC's counties and communities using a proven process to expand and enhance access. Recognizing that a one-size-fits-all approach does not work, BIO will rely heavily upon county and municipal governments, the Councils of Governments, and community leaders to partner with BIO to tailor solutions for their communities.

Together, we can collectively ensure North Carolina benefits from all that broadband has to offer.

### SUMMARY OF RECOMMENDATIONS

In this summary document, readers will find the plan's recommendations organized into six groups: broadband availability, broadband adoption, the K-12 homework gap, economic development, telehealth, and public safety. For more data, information and context the full report can be found at: <https://ncbroadband.gov/sbp>

The plan's recommendations specifically support the achievement of these goals. While not interdependent, they are interrelated and build on one another.

The final recommendations were informed by subject matter experts, providers, and stakeholders. While compiling research and recommendations from stakeholders, two consistent themes emerged: 1) communities that plan and have 'skin in the game' impact deployment and affect adoption; and 2) where competition is lacking, communities will need to partner with private-sector entities and ISPs to expand affordable options.

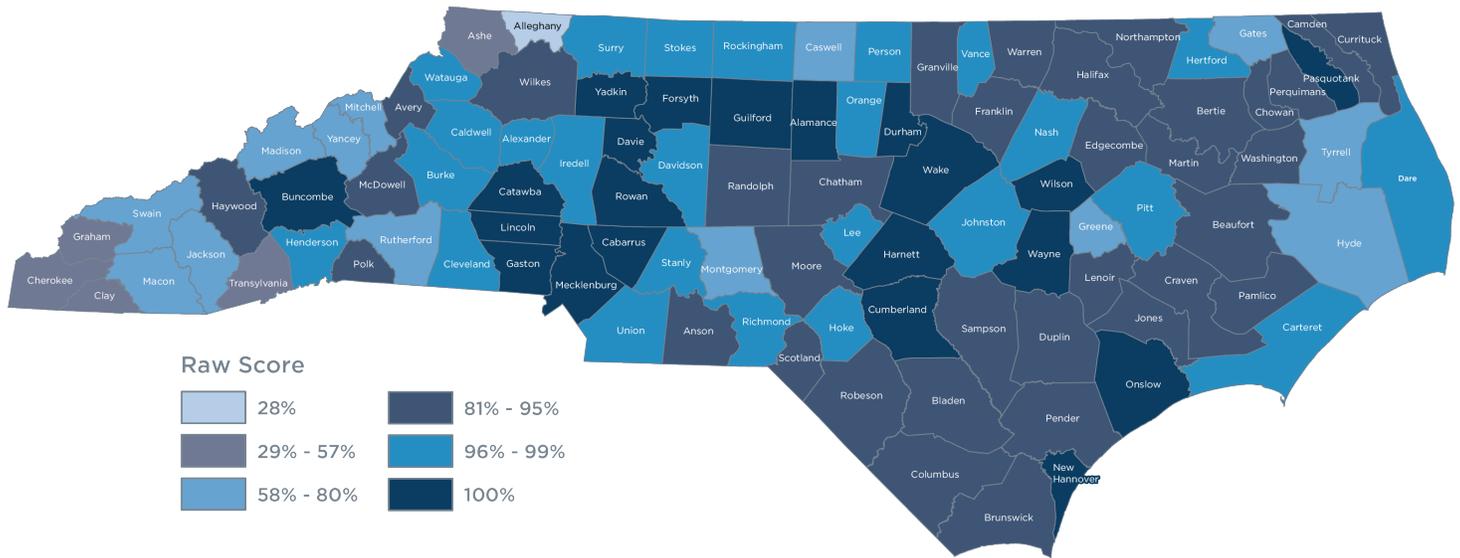
With these themes in mind, the recommendations offer ways for state and local leaders to foster an ecosystem that supports the expansion of access and increased adoption at the community and state level.

# BROADBAND AVAILABILITY RECOMMENDATIONS

## ABOUT AVAILABILITY

- Broadband availability represents the ratio of the population with access to broadband at the speed data is transmitted or bandwidth capacity, measured in bits per second.
- Also referred to as deployment, it measures the basic “supply” level of broadband or the capacity of the general population to utilize broadband communications.
- The availability recommendations leverage existing infrastructure and resources to improve broadband availability in NC.

FIGURE 3. BIO'S BROADBAND AVAILABILITY INDEX AT 25 MBPS DOWNLOAD SPEEDS



## RECOMMENDATION 1: Lower barriers to Broadband deployment.

### AV1.1 Lower barriers to access local infrastructure.

- The League of Municipalities and the Association of County Commissioners, in cooperation with BIO, should create a set of best practices and checklists for their members to ensure consistency, certainty and adherence to a process for the review and approval of permits or other required documents. This should include timelines and deadlines for both municipalities and ISPs for application review, processing and access.
- The checklist should include which assets providers consider—vertical assets such as water towers, instructions on how to engage providers, and issues to consider for negotiating access agreements. These include exchanging access to assets and infrastructure in exchange for reduced service costs or increasing bandwidth.
- These should simplify permitting applications and consider on-line portals and applications to increase efficiency and reduce paperwork

- This initiative should create a time-limited task force or joint committee to explore whether permitting for rights-of-ways and easements should be further streamlined through legislation. This task force should explore how other states have streamlined permitting and access agreements, and it should look at amounts local governments are charging providers for permitting or access fees and taxes.

### AV1.2 The state and local governments should better leverage existing federal, state and philanthropic foundation grants to help fund deployment.

- BIO should lead outreach to communities to educate and inform leaders about the federal and state funding sources available for broadband infrastructure and initiatives.
- The state houses numerous private foundations that generously support programs that improve local communities and the state as a whole. Many of these foundations have charters to support specific initiatives like healthcare, economic development, and education. Each of these initiatives is, or can be, positively impacted by broadband access.

BIO should collaborate with these entities to identify funding opportunities.

- ▶ BIO should have a dedicated staff member to educate local communities through the League, NCACC, the COGs, the county commissioner and the NC Grantmakers Association about available and relevant grants. These groups should provide assistance to local communities or counties with identifying grant programs and with grant writing.

#### **AV1.3 Incent providers to lay dark fiber strands.**

- ▶ During deployments, providers and other entities relying on fiber-optic networks—NCDOT and municipalities—should maximize the number of strands deployed. The relative cost of the fiber is minimal compared to the cost of trenching, boring or attaching to poles. Thus, laying additional dark fiber strands while the ground is open would prevent decrease future expenses. Capacity will be a concern in the foreseeable future, and there will always be a need for backhaul for high-speed wireless networks.

#### **AV1.4 Revise county infrastructure ownership regulations.**

- ▶ Counties currently build and deploy various infrastructure, such as water and sewer, on which their citizens rely. These enterprise activities are specifically authorized by the General Statutes. Infrastructure supporting broadband deployment, like conduit, is not. The NCGA should amend the General Statutes to allow counties to invest in or directly fund deployment of infrastructure with the goal of partnering with private providers for Internet service. Specifically, the GA should:
  - ◆ Amend G.S. 153A-274 to define 'broadband and digital infrastructure' as an authorized "public enterprise." It should authorize the county to lease or allow commercial use of that infrastructure. Additional language in the provision should specify which infrastructure qualifies and excludes the county from engaging in providing Internet services. This will also allow the counties to use the authority granted in § 160A-17.1—grants from other governments, to use grants for broadband infrastructure, as explained below.
  - ◆ Amend § 153A-349.60, authorization to provide grants, to provide consistency with the changes proposed above. Currently, this provision only allows counties to provide grants to providers using "unrestricted general fund revenue." Most counties, particularly disadvantage counties, do not have the budget to use these funds for broadband incentive grants.

#### **AV1.5 Design and implement a Dig Once Policy.**

- ▶ Dig Once Policies at the federal and state level vary in process and form, but all aim to leverage the opportunity to lay conduit and/or cables during road building or expansion projects. In addition to lowering capital

expenditures, it allows NCDOT better management of the ROWs by reducing the number of intrusions and by determining appropriate pathways. One policy will create uniformity across all regional divisions. The Federal Highway Administration encourages these policies and other states have adopted them with successful results. The Executive Branch should create a policy that provides ISPs with one of several options:

- ◆ NCDOT installs multiple or segmented conduit during projects and enters into a "cost-basis lease" agreement for use by ISPs. NCDOT should consider bartering or exchange the use of the conduit for the installation or use of fiber-optic cables for their traffic signaling and Smart Transportation initiatives.
- ◆ Notify providers of new road projects eligible for ISP facility installation when the project is announced and include standards, locations, and estimated costs. BIO could provide notifications to all ISPs quarterly. NCDOT should hold bi-annual meetings with ISPs to review new projects and work through anticipated issues.

- ▶ BIO should work with the League of Municipalities (NCLM) and the North Carolina Association of County Commissioners (NCACC) to create unified standards and best practices for local governments to incent providers to lay dark fiber or conduit when expanding roads—a dig once policy should apply at the local level when relevant.
- ▶ BIO, in cooperation with NCDOT, should create a database for use by ISPs and communities that include information on broadband-related projects occurring throughout the state, road projects, and major state infrastructure projects in locations where gaps in availability or access exist. This will help focus planning and capital where it is needed most.

#### **AV1.6 Railroad Crossing Policy.**

- ▶ Providers uniformly stated that deploying cables or fiber across railroad tracks is one of the biggest expenses they encounter and one of the most administratively exhausting. One anecdote ended with the provider deciding not to serve a particular neighborhood. BIO, NCDOT and the NCGA should engage railroads to develop standards and guidelines for access ROWs and for crossing railroads. These should contemplate reasonable costs for traversing areas owned by railroads. A uniform set of protocols should be agreed upon and followed when a provider makes a request. If a voluntary agreement cannot be reached, the NCGA should enact legislation similar to the statutory rights of providers to access privately owned utility poles.

**AV1.7 Design and implement a One Touch/Climb Once Policy for pole attachments.**

- ▶ Federal and state laws grant rights of access to poles. However, the negotiation process and expense continue to hinder deployment. The NCGA should lead a task force to explore the adoption, or codification if necessary, of a ‘one touch’ or a ‘climb once’ policy.
- ▶ Like ‘dig once’ there are variations of the form and content currently used, but the objective is to reduce the make-ready work for each pole to one action. Typically, when a new provider accesses a pole it must wait until the other inhabitants of the pole move their lines first. This results in multiple companies accessing the pole.
- ▶ A ‘one touch’ policy would allow prospective attachers to use independent, utility or owner approved certified contractors to perform all make-ready work under the joint direction and supervision of the pole owner. This promotes safety and limits disruptions to the ROW, typically a road. This policy should also address the need to develop an affordable, state-wide range for attachment fees and make-ready work costs.

**RECOMMENDATION 2: Assistance to Communities, Counties and Regions to Support Public-Private Partnerships**

**AV2.1 Expand the definition of those who get reimbursed for road move costs.**

- ▶ Utilities and ISPs bear the cost of moving their facilities during road construction. NCDOT does not charge these entities for access to the ROW. However, NCDOT and ISPs should explore with USDOT the use of federal funds to offset these costs, which will provide the ISPs with capital to expand or improve their facilities.

**AV2.2 Implement pilots like partnering with Army Reserve to lay fiber.**

- ▶ Local communities working with ISPs should leverage low-cost or voluntary resources to perform trenching or boring. The Army Reserve has partnered with communities in the Appalachian Region to dig trenches and perform other manual tasks associated with deployment.

**AV2.3 Design and implement a grant program for local governments.**

- ▶ The state provide and administer a grant program to help communities with path creation and infrastructure investments to offset or reduce CAPX costs. Past grant programs, such as the “Broadband Supply-side Grant,” offered by the state to incent deployment were part of the mix of programs that have positioned the state as one of the most connected in the nation.
- ▶ A low-dollar grant could provide communities with resources they currently lack: grant writing, planning, or inventory assessments. These activities empower communities to

develop equal partnerships with, and incent, ISPs that cannot justify a business case to deploy or upgrade network facilities. Any state grant or incentive program should be technology neutral, but should require the ISPs to have the capability to scale to a specific speed threshold.

- ▶ Existing grant programs like the Community Development Block Grant program provided by the US Department of Housing and Urban Development and administered by the NC DOC and DEQ can serve as examples for designing this grant.

**AV2.4 Design and implement a loan program for local governments.**

- ▶ An alternative, or in addition to grant programs, the state should explore creating a dedicated fund to offer low-interest loan guarantees to communities looking for capital assistance using existing available state funds. The federal government and other state models, such as the NC DOC’s and DEQ’s “CDBG Revolving Loan Fund” could serve as an example when designing the fund and identifying its funding source.

**AV2.5 Update state building codes so buildings are broadband-capable.**

- ▶ The NCGA, through an existing committee or a joint committee, should study the building codes and determine best options for ensuring all new or renovated state-owned or state-funded properties allow for access points to facilitate fiber-optic and wireless equipment. The code should encourage building design and materials facilitate wireless penetration.

**RECOMMENDATION 3: Leverage ongoing research and development of next-generation technologies to reach non-adopters and last-mile deployment.**

**AV3.1 Create a small grant program**

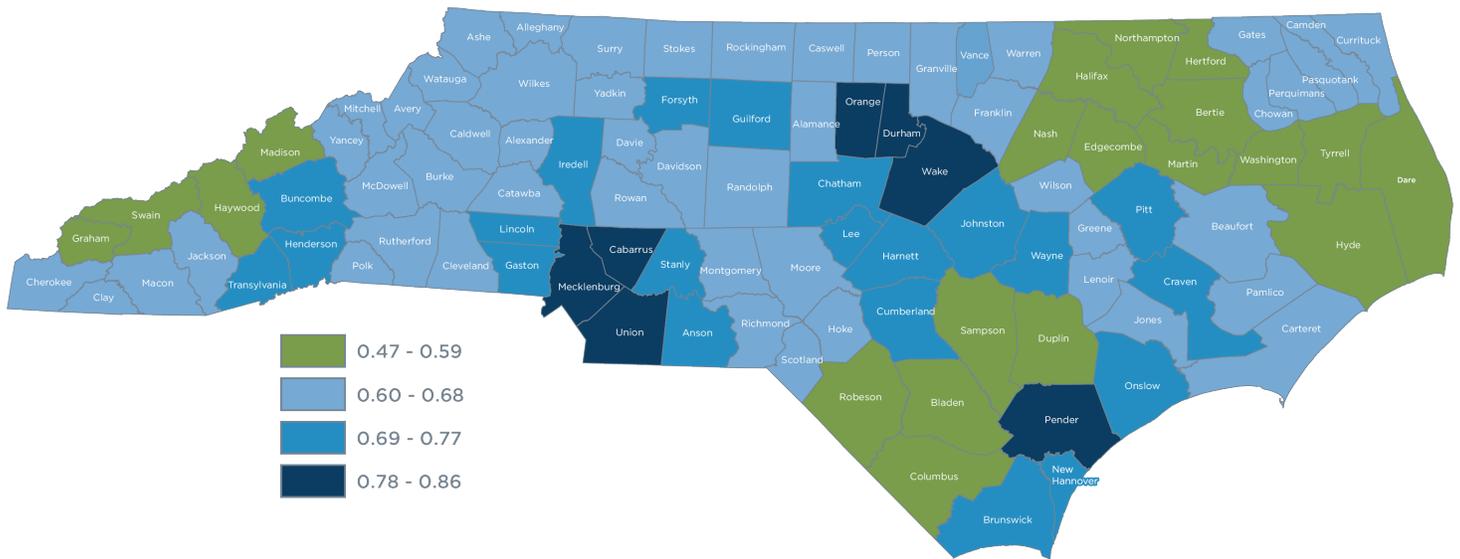
- ▶ The grant program would have few restrictions and would allow the state to partner with next-generation technology companies to create pilots and test solutions. This could include partnerships with other state agencies and their offices, non-profits, grant-makers and for-profit companies such as (but not limited to) NC DOC, DPS, DPI and the NC DOC’s Office of Science, Technology and Innovation, GoldenLEAF, and NC-based companies.
- ▶ The grant program would fund research to leverage technologies to expand access such as non-terrestrial technologies, small-cell technologies, and white space. It could also fund pilots for testing residential pointed (pointed directly at households) mobile access.

# BROADBAND ADOPTION RECOMMENDATIONS

## ABOUT ADOPTION

- Broadband adoption is defined as the percentage of the population (or households) that subscribes to broadband service.
- The five main barriers to broadband adoption are:
  - ◆ Unavailability of broadband
  - ◆ Digital literacy, or lack thereof
  - ◆ Cost or affordability of service
  - ◆ The internet's perceived relevancy in a person's daily life
  - ◆ Real or perceived costs of a computer; laptop or other devices

FIGURE 4. COUNTY-LEVEL ADOPTION RATES



### RECOMMENDATION 1: Educate low-income households and their community leaders on affordable broadband options

#### AD1.1 Advertise and promote lifeline and low-cost provider offerings.

- The state government, local governments, K-12 institutions, libraries, and healthcare providers who wish to improve broadband adoption should consider offering information on low-cost options such as Lifeline and the various provider offerings to low-income households.
- BIO should assist organizations who wish to promote the low-cost programs in developing necessary educational strategies, efforts, and materials.

#### AD1.1 The Public Utility Commission (PUC) Lifeline task force should meet regularly to assess and measure Lifeline subscription rates and provide recommendations at the state level for ensuring widespread adoption of the program.

- The task force should continue to publish quarterly reports.

- PUC should collaborate with BIO and other stakeholders to determine the educational efforts needed to ensure adoption of the program.

#### AD1.3 Publish best practices for local governments who want to offer subsidies or other adoption programs for low-income households for broadband.

- Programs to increase broadband adoption are most effective when spearheaded by the communities themselves. But, few resources exist for local governments seeking to increase broadband adoption in their communities through subsidies. Thus, BIO and its partners should develop and publish best practices for local governments who wish to construct a local-level subsidy program for vulnerable populations in their communities.

#### AD1.4 BIO and its partners should conduct a needs assessment and feasibility study of a state-level subsidy program for low-income households.

- As cost is a major barrier to broadband adoption, BIO recommends conducting new research studies, assessments, and feasibility studies to better understand the level of need for intervention and subsidy programs.
- BIO will utilize lessons-learned from the “NC LITE-UP program” and other national programs to compile and publish best practices.

- Programs like the Raleigh Digital Connectors program—a program created and provided by the City of Raleigh that provides technology education to youth who then teach the skills they have gained to other members of their communities—create opportunities for cross-generational training, learning, and skill development. This and other similar programs are good examples of programs that could be replicated throughout the state.

**RECOMMENDATION 2:** In collaboration with the State Librarian, BIO should continue to lead the effort to ensure high-speed, next-generation connectivity to all North Carolina Libraries.

- AD2.1 Leverage MCNC’s infrastructure to better facilitate high-speed connections at 100 percent of the state’s libraries.
- AD2.2 State Librarian and BIO should pursue an endowment of a two-year position funded by foundation grants with the purpose of bridging the state’s digital divide through the creation of community-based digital literacy programs, adoption initiatives, and technical assistance. These programs would be based on demonstrably successful models, such as Charlotte’s “Digital Charlotte” program (see Case Study 3).
- AD2.3 Use grant funds like E-Rate funds to obtain funding for the last mile to libraries.
- AD2.4 Provide grant-writing assistance or connections to entities capable of assisting with grant writing and management to communities and organizations in need of assistance.
- AD2.5 Create partnerships, search for cost-savings, and apply the savings to building out broadband to the communities and community anchor institutions. In addition, ensure government-owned community anchor institutions are adequately equipped with broadband infrastructure and digital devices to meet the local demand for services.

**RECOMMENDATION 3:** The state should continue to monitor and assess policies impacting mobile broadband adoption and use.

- AD3.1 As mobile broadband use continues to increase, policies and regulations that impact mobile broadband adoption and use should be continuously monitored to better understand their benefits and challenges.

**RECOMMENDATION 4:** Foster aggregation and creation of digital literacy tools by and for local communities and house them in one central location.

- AD4.1 Build upon existing tools like the federal government’s digital literacy portal: [digitalliteracy.gov](http://digitalliteracy.gov) to provide tested, digital literacy tools and curricula for organizations who seek to increase digital literacy in their communities.
- AD4.2 Highlight existing intergenerational digital literacy training programs so they can be replicated

**AD4.3 Identify best practices and publish those/ highlight case study models**

- Programs like the Raleigh Digital Connectors program exist throughout the state, but information on them cannot be found in one central location. In collaboration with stakeholders and partners, BIO should compile a living list of these programs and models, publishing and distributing for NC communities and organizations to consult when developing their programs.

# HOMWORK GAP RECOMMENDATIONS

## ABOUT THE HOMEWORK GAP

- The homework gap is defined as the proportion of students without access to broadband internet and broadband-related devices outside of school.
- Nationally, 70 percent of teachers assign homework that requires broadband access, but only 33 percent of students have access at home.

### **RECOMMENDATION 1: Leverage school's digital infrastructure for use by the community as a whole**

**HG1.1 The state should advocate for E-Rate reforms to allow for school districts negotiating internet service contracts or contract renewals to give greater preference to providers committed to serving the community.**

- At this time, the FCC and Universal Service Administrative Company (USAC) approve funding for service contracts that award to the lowest bidder. This has created a market that encourages the cherry-picking of schools. In some cases, these providers—including start-ups created for the sole purpose of winning lucrative school contracts—by-pass unserved or underserved residents.

**HG1.2 The DPI and the Friday Institute at North Carolina State University should provide instruction for school administrators on drafting Request for Proposals (RFPs).**

- The RFPs should appropriately give additional weight to ISPs that plan to provide service for the community within a designated area beyond the Wide Area Network (WAN). This can include an RFP that incentivizes providers by combining service to libraries.

**HG1.3 School districts and communities should invest in low-cost mobile service solutions.**

- Many school districts around the state and country use fixed and mobile wireless solutions to provide access outside of the school. These include equipping buses with Wi-Fi access points, Mi-Fi checkouts through the schools, the libraries or non-profits, and faith-based organizations.
- Low-cost/low bandwidth cellular solutions are being piloted and could provide another solution. Bandwidth is limited and filtered for access to teacher-approved sites. It prevents access to data-rich sites or unapproved websites.
- The planning and build-out of a nation-wide, interoperable wireless data network—FirstNet—is ongoing. The dedicated spectrum for FirstNet includes significant bandwidth. The state should advocate at the federal level that FirstNet and national leaders consider secondary or non-primary uses—SecondNet—

of the network for educational purposes. FirstNet pledges approximately 100 percent coverage. Students without access should be able to access the network for completing homework or researching until an emergency incident or event.

**HG1.4 The state should designate an E-Rate coordinator.**

- This individual or office (could be the existing DPI coordinator) would provide one centralized place for knowledge to support all eligible institutions. This will ensure the state is fully leveraging E-Rate discounts for schools and libraries.

### **RECOMMENDATION 2: Better data on North Carolina's homework gap.**

Further research and granular data are needed to enable policy makers and community leaders to focus resources and determine appropriate solutions.

**HG2.1 The state should distribute a survey in the schools for parents to complete and return to obtain more granular data on where the homework gap exists. This could be a telephone, internet, or paper survey (or all of the above) targeted at parents. The Friday Institute at NC State University (NCSU) is regarded nationally for developing and evaluating these types of surveys.**

**HG2.2 Measure the Homework Gap using non-survey data, such as logs from Power School, speed tests, or other applications. MCNC measures and can analyze all school district data. The NC Government Data Analytics Center (GDAC) could assist with data gathering and analysis.**

### **RECOMMENDATION 3: Enhance and expand adoption initiatives targeted at students and parents**

**HG3.1 The state should leverage the K-12 Education System to reach children and their parents.**

- School or community-led initiatives should include consistent and continuous education for parents on technology tools their children should use in and out of the classroom. Schools and communities can host digital literacy training for parents at the schools or libraries during after-work hours. It can include remote, video-based training.

**HG3.2 Expand device delivery to low-income families, especially those with K-12 students.**

- ▶ The state should explore amending the State Surplus law, NCGS 143-64.02,<sup>vi</sup> to allow discarded devices to be donated to non-profits that refurbish and donate computers to low-income families and families with K-12 students in the home, which will increase device access. Universities should consider computer donations to non-profits.
- ▶ BIO should encourage the duplication of non-profits like the Kramden Institutes' (Durham, NC) and E2D (Davidson, NC) in other locations across the state through education efforts.
- ▶ Once the NC Digital Learning Plan is fully implemented DPI and school districts should use savings from text book purchases to purchase devices for the students without a device in the home.

**HG3.3 Encourage creation and/or expansion of tech-based curriculum in K-12 schools**

- ▶ DPI should develop a curriculum with standard requirements for students with a technology proclivity or interest that includes the study and training of data analytics and coding. It should be a real time, modern, flexible, and personalized curriculum so students are exposed to the most current learning and information.
- ▶ It should also showcase technology employment opportunities to expose to possibilities technical training enables.
- ▶ The state should create a technology apprenticeship program for high school students to receive course credit in exchange for working with or at technology companies.
- ▶ In addition, and in an effort to address the variety of technology job opportunities, DPI or school districts should explore the creation of a pilot curriculum or class at schools focused on computer repair and refurbishment. Schools can partner with community colleges, non-profits or device manufacturers in the state to develop the curriculum and provide instructors. Refurbished computers can then be donated to other students in need or to community organizations that facilitate access to devices for low-income individuals and families.

**RECOMMENDATION 4: Greater use of the Lifeline program and low-cost provider programs.**

**HG4.1 BIO should partner with DPI, NC's Local Education Authorities (LEAs), and individual school districts to publicize the Lifeline program.**

**HG4.2 BIO should partner with DPI, LEA's, and individual school districts to publicize NC providers' low-cost broadband subscription programs.**

# ECONOMIC DEVELOPMENT RECOMMENDATIONS

## ABOUT ECONOMIC DEVELOPMENT AND BROADBAND

- Economic development is the act, implementation or study of policies, strategies and techniques to improve the economy.
- Broadband impacts the economy and economic development strategies, especially small business and workforce development.

### **RECOMMENDATION 1: Incorporate Broadband into “Certified Work Ready” Communities Initiative.**

#### **ED1.1 Include broadband as an indicator in the “Certified Work Ready Community” initiative.**

- Partner with NC Chamber of Commerce and other workforce development partners to incorporate broadband into existing “Certified Work Ready Communities” program

#### **ED1.2 Advertise certified communities to providers as good areas for providers to invest and/or expand broadband infrastructure.**

### **RECOMMENDATION 2: Launch a state-supported campaign to brand the state (internally and externally) as a national digital leader.**

- BIO should collaborate with partners such as the NCDOP, NCEDP, the NC Chamber of Commerce, the North Carolina Technology Association (NCTA), and other stakeholders to develop a campaign to brand the state internally and externally as a leader in the creation and use of next-generation technologies.
- The campaign should complement and align with NC’s current state brand, “Nothing Compares.”

### **RECOMMENDATION 3: Leverage existing state agency small business and workforce development tools.**

#### **ED3.1 Catalogue, leverage, and build upon existing small business support organizations’ current efforts to improve small businesses’ broadband utilization.**

- BIO should partner with other state agencies, local governments, non-profits, and NC’s technology companies to create a database or portal of the existing efforts to improve broadband utilization and digital literacy among small businesses and individual citizens.

#### **ED3.2 Leverage and build upon existing workforce education and training.**

- In collaboration with the Community College System, BIO should leverage and build upon existing workforce development education and training for digital literacy, computer and technology skills, and various subjects via in-person and distance learning formats offered through the Community College System.

- In collaboration with other workforce development agencies, BIO should work with the NC Community College System to ensure partnerships are established with NC companies to prepare potential employees and job applicants for tech-based jobs.

#### **ED3.3 Ensure the NC Works Career Centers’ employees have adequate tools and training to assist customers with digital literacy needs**

- BIO and other stakeholders should collaborate with the NC Division of Workforce Solutions to ensure the NC Works Career Centers have the necessary tools and training for their employees to adequately provide digital literacy training to incoming job-seekers.

#### **ED3.4 Leverage NC Works portal and partner with NC DOC’s Labor and Economic Analysis Division (LEAD) and Division of Employment Security (DES) to reach citizens in need of digital literacy skills with training opportunities.**

### **RECOMMENDATION 4: Encourage communities to include broadband in their economic development plans**

#### **ED4.1 Encourage NC communities to include broadband in regional strategic planning like Comprehensive Economic Development Strategy (CEDS) plans.<sup>vii</sup>**

- CEDS plans are “strategy driven plans for regional economic development” required to be updated every five years by the EDA<sup>viii</sup> for regions that wish to qualify for EDA assistance under its Public Works and Economic Adjustment Assistance programs. CEDS plans are also a prerequisite for regions to receive the “Economic Development District” designation.
- Including strategies to increase broadband availability, adoption, and use in the regional CEDS plans will encourage regional focus and collaboration on increasing broadband availability, adoption, and use.

**ED4.2 Encourage NC communities to include broadband in their local planning efforts.**

- ▶ Often, communities create goals for their communities through strategic plans, comprehensive plans, or visioning documents or sessions. BIO should collaborate with other stakeholders such as the NC DOC, the Rural Center, other stakeholder organizations and key community leaders such as school superintendents or secondary educational institutions' leaders to assist communities as they develop their plans. In this collaboration, BIO should provide strategies to increase broadband deployment, adoption, and use as an economic development tool.

# TELEHEALTH RECOMMENDATIONS

## BROADBAND AND TELEHEALTH

- Telehealth is the virtual delivery of a wide variety of healthcare services, health information, and health education.
- Telehealth relies upon consistent, reliable and pervasive broadband.

### **RECOMMENDATION 1: Better Leverage the Healthcare Connect Fund.**

- TH1.1 In collaboration with NC's telehealth organizations, BIO should improve education of and marketing for the Health Care Connect Fund (HCF) among hospitals and healthcare organizations.
- TH1.2 The state should advocate that the FCC allow HCF to subsidize internal broadband connections and equipment (within buildings/networks).

### **RECOMMENDATION 2: Create telehealth best practices for healthcare providers.**

- TH2.1 In collaboration with NCHICA and other NC telehealth organizations, BIO should endorse and assist in distributing best practices developed by telehealth experts for healthcare providers.
- The best practices would include information on how best to incorporate ICT and telehealth services efficiently and effectively into their operations.
  - Include a list of things they should explore as they explore improving ICT in their healthcare practices.
  - The best practices should be created by peers, funders, and thought leaders in the healthcare industry.

### **RECOMMENDATION 3: Broadband to all healthcare facilities.**

- NCGA should review healthcare facility building requirements to assess how broadband infrastructure and connectivity can be incorporated into the construction of healthcare facilities and mandate construction codes or requirements be updated to accommodate broadband infrastructure.

### **RECOMMENDATION 4: Healthcare providers market low-cost options for broadband at patients' homes.**

- TH4.1 In collaboration with telehealth experts and healthcare organizations BIO should provide education on the reformed Lifeline program to healthcare patients as they leave their place of care.
- TH4.2 In collaboration with telehealth experts and healthcare organizations, BIO should provide education on providers' low-cost broadband subscription programs to healthcare patients as they leave their place of care.

### **RECOMMENDATION 5: Remote Monitoring Pilots.**

- In collaboration with telehealth experts and healthcare organizations, BIO should design and pilot programs in which healthcare providers send a mi-fi/air card home with patients for remote monitoring during recovery and/or home-based medical care.

### **RECOMMENDATION 6: Medical reimbursements for broadband service.**

- The state (Governor, DHHS, and BIO) should advocate for medical reimbursement change to the federal government to allow for reimbursements for broadband service when patients are using it to monitor their health and improve health outcomes.

### **RECOMMENDATION 7: Develop public-private partnerships to increase infiltration of telehealth services into the healthcare system.**

- TH7.1 BIO will collaborate with DHHS and other stakeholders to develop public-private-partnerships to increase telehealth service offerings throughout NC to decrease healthcare costs to the organizations and individuals, increase positive health outcomes, and reach unserved and vulnerable populations.
- TH7.2 The state should allot additional staff to DHHS's Office of Rural Health to increase health IT technical assistance to community partners.

# PUBLIC SAFETY RECOMMENDATIONS

## ABOUT PUBLIC SAFETY AND BROADBAND

- Ubiquitous, reliable broadband networks and communications systems are essential for first responders to keep the public safe.

**RECOMMENDATION 1:** The state should continue to work with its federal partners on the national effort to build a state-wide, interoperable data network.

- PS1.1 Continue to support the FirstNetNC office by utilizing this resource for any information related to the FirstNet effort.
- PS1.2 The state should create an office for Public Safety Communications Technologies within the DIT to work closely with: The Criminal Justice Information Network (CJIN), Criminal Justice Law Enforcement Automated Data Services (CJLEADS), the North Carolina 911 Board, and the DIT Broadband Infrastructure Office -FirstNet North Carolina. This office would support the Department of Public Safety, Department of Health and Human Services - Office of EMS, Department of Insurance - Office of State Fire Marshall, and the many public safety agencies throughout the state especially smaller entities that are not able to explore emerging communications technologies.

**RECOMMENDATION 2:** The state should continue to pursue and fund the Next-Generation 911 initiative using existing funding.

**RECOMMENDATION 3:** The state should work with all public safety and first responder agencies to continue eliminating silos and encourage sharing networks.

- PS3.1 Continue support for the SWIC position under NCEM.
- PS3.2 The state should consider elevating the SIEC to a formally recognized body of communication subject matter experts representing various disciplines across the state. No funding is needed to implement this.

# ABOUT THE BROADBAND INFRASTRUCTURE OFFICE

The Broadband Infrastructure Office was established by Governor Pat McCrory in early 2015 as a statewide resource for broadband availability and adoptions initiatives. The mission of the Broadband Infrastructure Office is to provide policy recommendations and planning guidance to community and state leaders to foster the expansion of high-speed internet access with the objective of improving global competitiveness, education, public safety, health care, and government efficiency. In keeping with the belief that organized and informed communities will bridge the digital divide, a technical and community assistance team partners with willing communities to provide on-the-ground assistance to implement those policies and plans.

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# CITATIONS AND ENDNOTES

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- ii. Cisco. Cisco Visual Networking Index: Forecast and Methodology, 2014-2019 White Paper. May 2015. [http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white\\_paper\\_c11-481360.html](http://www.cisco.com/c/en/us/solutions/collateral/service-provider/ip-ngn-ip-next-generation-network/white_paper_c11-481360.html) (accessed February, 2016).
- iii. Federal Communications Commission (FCC). 2016 Broadband Progress Report, Appendix E. Washington D.C.: 2016. <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/2016-broadband-progress-report> (accessed January, 2016).
- iv. Wilson and Powers. "Digital Technology and Internet Access Trends in North Carolina: 1999-2013." 2014.
- v. At whatever is the current definition of broadband in 2022.
- vi. 143-64.03. Powers and duties of the State agency for surplus property. (a) The State Surplus Property Agency is authorized and directed to: (1) Sell all State owned supplies, materials, and equipment that are surplus, obsolete, or unused and sell all seized vehicles and other conveyances that the State Surplus Property Agency is authorized to sell; (2) Warehouse such property; and (3) Distribute such property to tax-supported or nonprofit tax-exempt organizations. (b) The State Surplus Property Agency is authorized and empowered to act as a clearinghouse of information for agencies and private nonprofit tax-exempt organizations, to locate property available for acquisition from State agencies, to ascertain the terms and conditions under which the property may be obtained, to receive NC General Statutes - Chapter 143 Article 3A 2 requests from agencies and private nonprofit tax-exempt organizations, and transmit all available information about the property, and to aid and assist the agencies and private nonprofit tax-exempt organizations in transactions for the acquisition of State surplus property. (c) The State agency for surplus property, in the administration of Part 1 of this Article, shall cooperate to the fullest extent consistent with the provisions of Part 1 of this Article, with the departments or agencies of the State. (d) The State agency for surplus property may sell or otherwise dispose of surplus property, including motor vehicles, through an electronic auction service. (1991, c. 358, s. 2; 2003-284, s. 18.6(a); 2015-241, s. 27.3(f).)
- vii. U.S. Economic Development Administration Website. "CEDS Content Guidelines." <https://www.eda.gov/ceds/> (accessed March 2016).
- viii. U.S. Economic Development Administration Website. "What is Economic Development?" <https://www.eda.gov/index.htm> (accessed March 2016).



 Nothing Compares   
**NORTH CAROLINA**

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